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Sequence Listing was accepted.

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Reviewer: Anne Corrigan

Timestamp: Mon Oct 29 18:54:04 EDT 2007

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Application No: 10581942 Version No: 1.0

Input Set:

Output Set:

Started: 2007-10-09 12:57:58.180
Finished: 2007-10-09 12:57:58.886
Elapsed: 0 hr(s) 0 min(s) 0 sec(s) 706 ms
Total Warnings: 2
Total Errors: 0
No. of SeqIDs Defined: 13
Actual SeqID Count: 13

Error code	Error Description
W 213	Artificial or Unknown found in <213> in SEQ ID (12)
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SEQUENCE LISTING

<110> National Institutes of Health

Qasba, Pradman

Boeggeman, Elizabeth

Ramakrishnan, Boopathy

<120> Catalytic Domains Of Beta(1,4)-Galactosyltransferase I Having
Altered Metal Ion Specificity

<130> 1662.027WO1

<140> 10581942

<141> 2007-10-09

<160> 13

<170> FastSEQ for Windows Version 4.0

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<211> 6

<212> PRT

<213> Homo sapiens

<400> 1

Cys Arg Met Ile Arg His

1 5

<210> 2

<211> 7

<212> PRT

<213> Homo sapiens

<400> 2

Phe Asn Arg Ala Lys Leu Leu

1 5

<210> 3

<211> 7

<212> PRT

<213> Homo sapiens

<400> 3

Tyr Val Gln Tyr Phe Gly Gly

1 5

<210> 4

<211> 398

<212> PRT

<213> Homo sapiens

<400> 4

Met Arg Leu Arg Glu Pro Leu Leu Ser Arg Ser Ala Ala Met Pro Gly

1 5 10 15

Ala Ser Leu Gln Arg Ala Cys Arg Leu Leu Val Ala Val Cys Ala Leu

20 25 30

His Leu Gly Val Thr Leu Val Tyr Tyr Leu Ala Gly Arg Asp Leu Ser
 35 40 45
 Arg Leu Pro Gln Leu Val Gly Val Ser Thr Pro Leu Gln Gly Gly Ser
 50 55 60
 Asn Ser Ala Ala Ala Ile Gly Gln Ser Ser Gly Asp Leu Arg Thr Gly
 65 70 75 80
 Gly Ala Arg Pro Pro Pro Leu Gly Ala Ser Ser Gln Pro Arg Pro
 85 90 95
 Gly Gly Asp Ser Ser Pro Val Val Asp Ser Gly Pro Gly Pro Ala Ser
 100 105 110
 Asn Leu Thr Ser Val Pro Val Pro His Thr Thr Ala Leu Ser Leu Pro
 115 120 125
 Ala Cys Pro Glu Glu Ser Pro Leu Leu Val Gly Pro Met Leu Ile Glu
 130 135 140
 Phe Asn Met Pro Val Asp Leu Glu Leu Val Ala Lys Gln Asn Pro Asn
 145 150 155 160
 Val Lys Met Gly Gly Arg Tyr Ala Pro Arg Asp Cys Val Ser Pro His
 165 170 175
 Lys Val Ala Ile Ile Ile Pro Phe Arg Asn Arg Gln Glu His Leu Lys
 180 185 190
 Tyr Trp Leu Tyr Tyr Leu His Pro Val Leu Gln Arg Gln Gln Leu Asp
 195 200 205
 Tyr Gly Ile Tyr Val Ile Asn Gln Ala Gly Asp Thr Ile Phe Asn Arg
 210 215 220
 Ala Lys Leu Leu Asn Val Gly Phe Gln Glu Ala Leu Lys Asp Tyr Asp
 225 230 235 240
 Tyr Thr Cys Phe Val Phe Ser Asp Val Asp Leu Ile Pro Met Asn Asp
 245 250 255
 His Asn Ala Tyr Arg Cys Phe Ser Gln Pro Arg His Ile Ser Val Ala
 260 265 270
 Met Asp Lys Phe Gly Phe Ser Leu Pro Tyr Val Gln Tyr Phe Gly Gly
 275 280 285
 Val Ser Ala Ser Ser Lys Gln Gln Phe Leu Thr Ile Asn Gly Phe Pro
 290 295 300
 Asn Asn Tyr Trp Gly Trp Gly Gly Glu Asp Asp Asp Ile Phe Asn Arg
 305 310 315 320
 Leu Val Phe Arg Gly Met Ser Ile Ser Arg Pro Asn Ala Val Val Gly
 325 330 335
 Thr Cys Arg Met Ile Arg His Ser Arg Asp Lys Lys Asn Glu Pro Asn
 340 345 350
 Pro Gln Arg Phe Asp Arg Ile Ala His Thr Lys Glu Thr Met Leu Ser
 355 360 365
 Asp Gly Leu Asn Ser Leu Thr Tyr Gln Val Leu Asp Val Gln Arg Tyr
 370 375 380
 Pro Leu Tyr Thr Gln Ile Thr Val Asp Ile Gly Thr Pro Ser
 385 390 395

<210> 5

<211> 399

<212> PRT

<213> Mus musculus

<400> 5

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 Ala Thr Leu Gln Arg Ala Cys Arg Leu Leu Val Ala Val Cys Ala Leu
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His Leu Gly Val Thr Leu Val Tyr Tyr Leu Ser Gly Arg Asp Leu Ser
 35 40 45
 Arg Leu Pro Gln Leu Val Gly Val Ser Ser Thr Leu Gln Gly Gly Thr
 50 55 60
 Asn Gly Ala Ala Ala Ser Lys Gln Pro Pro Gly Glu Gln Arg Pro Arg
 65 70 75 80
 Gly Ala Arg Pro Pro Pro Leu Gly Val Ser Pro Lys Pro Arg Pro
 85 90 95
 Gly Leu Asp Ser Ser Pro Gly Ala Ala Ser Gly Pro Gly Leu Lys Ser
 100 105 110
 Asn Leu Ser Ser Leu Pro Val Pro Thr Thr Thr Gly Leu Leu Ser Leu
 115 120 125
 Pro Ala Cys Pro Glu Glu Ser Pro Leu Leu Val Gly Pro Met Leu Ile
 130 135 140
 Asp Phe Asn Ile Ala Val Asp Leu Glu Leu Leu Ala Lys Lys Asn Pro
 145 150 155 160

 Glu Ile Lys Thr Gly Gly Arg Tyr Ser Pro Lys Asp Cys Val Ser Pro
 165 170 175
 His Lys Val Ala Ile Ile Ile Pro Phe Arg Asn Arg Gln Glu His Leu
 180 185 190
 Lys Tyr Trp Leu Tyr Tyr Leu His Pro Ile Leu Gln Arg Gln Gln Leu
 195 200 205
 Asp Tyr Gly Ile Tyr Val Ile Asn Gln Ala Gly Asp Thr Met Phe Asn
 210 215 220
 Arg Ala Lys Leu Leu Asn Ile Gly Phe Gln Glu Ala Leu Lys Asp Tyr
 225 230 235 240
 Asp Tyr Asn Cys Phe Val Phe Ser Asp Val Asp Leu Ile Pro Met Asp
 245 250 255
 Asp Arg Asn Ala Tyr Arg Cys Phe Ser Gln Pro Arg His Ile Ser Val
 260 265 270
 Ala Met Asp Lys Phe Gly Phe Ser Leu Pro Tyr Val Gln Tyr Phe Gly
 275 280 285
 Gly Val Ser Ala Leu Ser Lys Gln Gln Phe Leu Ala Ile Asn Gly Phe
 290 295 300
 Pro Asn Asn Tyr Trp Gly Trp Gly Gly Glu Asp Asp Asp Ile Phe Asn
 305 310 315 320
 Arg Leu Val His Lys Gly Met Ser Ile Ser Arg Pro Asn Ala Val Val
 325 330 335
 Gly Arg Cys Arg Met Ile Arg His Ser Arg Asp Lys Lys Asn Glu Pro
 340 345 350
 Asn Pro Gln Arg Phe Asp Arg Ile Ala His Thr Lys Glu Thr Met Arg
 355 360 365
 Phe Asp Gly Leu Asn Ser Leu Thr Tyr Lys Val Leu Asp Val Gln Arg
 370 375 380
 Tyr Pro Leu Tyr Thr Gln Ile Thr Val Asp Ile Gly Thr Pro Arg
 385 390 395

<210> 6

<211> 402

<212> PRT

<213> Bos taurus

<400> 6

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His	Leu	Gly	Val	Thr	Leu	Val	Tyr	Tyr	Leu	Ala	Gly	Arg	Asp	Leu	Arg	
35					40					45						
Arg	Leu	Pro	Gln	Leu	Val	Gly	Val	His	Pro	Pro	Leu	Gln	Gly	Ser	Ser	
50					55					60						
His	Gly	Ala	Ala	Ala	Ile	Gly	Gln	Pro	Ser	Gly	Glu	Leu	Arg	Leu	Arg	
65					70					75					80	
Gly	Val	Ala	Pro	Pro	Pro	Leu	Gln	Asn	Ser	Ser	Lys	Pro	Arg	Ser		
85					90					95						
Arg	Ala	Pro	Ser	Asn	Leu	Asp	Ala	Tyr	Ser	His	Pro	Gly	Pro	Gly	Pro	
100					105					110						
Gly	Pro	Gly	Ser	Asn	Leu	Thr	Ser	Ala	Pro	Val	Pro	Ser	Thr	Thr	Thr	
115					120					125						
Arg	Ser	Leu	Thr	Ala	Cys	Pro	Glu	Glu	Ser	Pro	Leu	Leu	Val	Gly	Pro	
130					135					140						
Met	Leu	Ile	Glu	Phe	Asn	Ile	Pro	Val	Asp	Leu	Lys	Leu	Ile	Glu	Gln	
145					150					155					160	
Gln	Asn	Pro	Lys	Val	Lys	Leu	Gly	Gly	Arg	Tyr	Thr	Pro	Met	Asp	Cys	
165					170					175						
Ile	Ser	Pro	His	Lys	Val	Ala	Ile	Ile	Ile	Leu	Phe	Arg	Asn	Arg	Gln	
180					185					190						
Glu	His	Leu	Lys	Tyr	Trp	Leu	Tyr	Tyr	Leu	His	Pro	Met	Val	Gln	Arg	
195					200					205						
Gln	Gln	Leu	Asp	Tyr	Gly	Ile	Tyr	Val	Ile	Asn	Gln	Ala	Gly	Glu	Ser	
210					215					220						
Met	Phe	Asn	Arg	Ala	Lys	Leu	Leu	Asn	Val	Gly	Phe	Lys	Glu	Ala	Leu	
225					230					235					240	
Lys	Asp	Tyr	Asp	Tyr	Asn	Cys	Phe	Val	Phe	Ser	Asp	Val	Asp	Leu	Ile	
245					250					255						
Pro	Met	Asn	Asp	His	Asn	Thr	Tyr	Arg	Cys	Phe	Ser	Gln	Pro	Arg	His	
260					265					270						
Ile	Ser	Val	Ala	Met	Asp	Lys	Phe	Gly	Phe	Ser	Leu	Pro	Tyr	Val	Gln	
275					280					285						
Tyr	Phe	Gly	Gly	Val	Ser	Ala	Leu	Ser	Lys	Gln	Gln	Phe	Leu	Ser	Ile	
290					295					300						
Asn	Gly	Phe	Pro	Asn	Asn	Tyr	Trp	Gly	Trp	Gly	Gly	Glu	Asp	Asp	Asp	
305					310					315					320	
Ile	Tyr	Asn	Arg	Leu	Ala	Phe	Arg	Gly	Met	Ser	Val	Ser	Arg	Pro	Asn	
325					330					335						
Ala	Val	Ile	Gly	Lys	Cys	Arg	Met	Ile	Arg	His	Ser	Arg	Asp	Lys	Lys	
340					345					350						
Asn	Glu	Pro	Asn	Pro	Gln	Arg	Phe	Asp	Arg	Ile	Ala	His	Thr	Lys	Glu	
355					360					365						
Thr	Met	Leu	Ser	Asp	Gly	Leu	Asn	Ser	Leu	Thr	Tyr	Met	Val	Leu	Glu	
370					375					380						
Val	Gln	Arg	Tyr	Pro	Leu	Tyr	Thr	Lys	Ile	Thr	Val	Asp	Ile	Gly	Thr	
385					390					395					400	
Pro Ser																

<210> 7

<211> 113

<212> PRT

<213> Homo sapiens

<400> 7

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			20					25						30	
Leu	Arg	Thr	Gly	Gly	Ala	Arg	Pro	Pro	Pro	Pro	Leu	Gly	Ala	Ser	Ser
		35					40					45			
Gln	Pro	Arg	Pro	Gly	Gly	Asp	Ser	Ser	Pro	Val	Val	Asp	Ser	Gly	Pro
	50					55					60				
Gly	Pro	Ala	Ser	Asn	Leu	Thr	Ser	Val	Pro	Val	Pro	His	Thr	Thr	Ala
65					70					75					80
Leu	Ser	Leu	Pro	Ala	Cys	Pro	Glu	Glu	Ser	Pro	Leu	Leu	Val	Gly	Pro
				85					90					95	
Met	Leu	Ile	Glu	Phe	Asn	Met	Pro	Val	Asp	Leu	Glu	Leu	Val	Ala	Lys
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Gln															

<210> 8

<211> 85

<212> PRT

<213> Bos taurus

<400> 8

Arg	Asp	Leu	Arg	Arg	Leu	Pro	Gln	Leu	Val	Gly	Val	His	Pro	Pro	Leu
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Gln	Gly	Ser	Ser	His	Gly	Ala	Ala	Ala	Ile	Gly	Gln	Pro	Ser	Gly	Glu
			20					25					30		
Leu	Arg	Leu	Arg	Gly	Val	Ala	Pro	Pro	Pro	Pro	Leu	Gln	Asn	Ser	Ser
		35					40					45			
Lys	Pro	Arg	Ser	Arg	Ala	Pro	Ser	Asn	Leu	Asp	Ala	Tyr	Ser	His	Pro
	50					55				60					
Gly	Pro	Gly	Pro	Gly	Pro	Gly	Ser	Asn	Leu	Thr	Ser	Ala	Pro	Val	Pro
65					70					75					80
Ser	Thr	Thr	Thr	Arg											
				85											

<210> 9

<211> 273

<212> PRT

<213> Homo sapiens

<400> 9

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Leu	Ile	Glu	Phe	Asn	Met	Pro	Val	Asp	Leu	Glu	Leu	Val	Ala	Lys	Gln
			20					25					30		
Asn	Pro	Asn	Val	Lys	Met	Gly	Gly	Arg	Tyr	Ala	Pro	Arg	Asp	Cys	Val
		35					40					45			
Ser	Pro	His	Lys	Val	Ala	Ile	Ile	Ile	Pro	Phe	Arg	Asn	Arg	Gln	Glu
	50					55				60					
His	Leu	Lys	Tyr	Trp	Leu	Tyr	Tyr	Leu	His	Pro	Val	Leu	Gln	Arg	Gln
65					70					75					80
Gln	Leu	Asp	Tyr	Gly	Ile	Tyr	Val	Ile	Asn	Gln	Ala	Gly	Asp	Thr	Ile
				85					90				95		
Phe	Asn	Arg	Ala	Lys	Leu	Leu	Asn	Val	Gly	Phe	Gln	Glu	Ala	Leu	Lys
			100					105					110		
Asp	Tyr	Asp	Tyr	Thr	Cys	Phe	Val	Phe	Ser	Asp	Val	Asp	Leu	Ile	Pro

115	120	125
Met Asn Asp His Asn Ala Tyr Arg Cys Phe Ser Gln Pro Arg His Ile		
130	135	140
Ser Val Ala Met Asp Lys Phe Gly Phe Ser Leu Pro Tyr Val Gln Tyr		
145	150	155
Phe Gly Gly Val Ser Ala Ser Ser Lys Gln Gln Phe Leu Thr Ile Asn		160
165	170	175
Gly Phe Pro Asn Asn Tyr Trp Gly Trp Gly Gly Glu Asp Asp Asp Ile		
180	185	190
Phe Asn Arg Leu Val Phe Arg Gly Met Ser Ile Ser Arg Pro Asn Ala		
195	200	205
Val Val Gly Thr Cys Arg Met Ile Arg His Ser Arg Asp Lys Lys Asn		
210	215	220
Glu Pro Asn Pro Gln Arg Phe Asp Arg Ile Ala His Thr Lys Glu Thr		
225	230	235
Met Leu Ser Asp Gly Leu Asn Ser Leu Thr Tyr Gln Val Leu Asp Val		
245	250	255
Gln Arg Tyr Pro Leu Tyr Thr Gln Ile Thr Val Asp Ile Gly Thr Pro		
260	265	270
Ser		

<210> 10
 <211> 273
 <212> PRT
 <213> Bos taurus

<400> 10

Ser Leu Thr Ala Cys Pro Glu Glu Ser Pro Leu Leu Val Gly Pro Met		
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Leu Ile Glu Phe Asn Ile Pro Val Asp Leu Lys Leu Ile Glu Gln Gln		
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Asn Pro Lys Val Lys Leu Gly Gly Arg Tyr Thr Pro Met Asp Cys Ile		
35	40	45
Ser Pro His Lys Val Ala Ile Ile Ile Leu Phe Arg Asn Arg Gln Glu		
50	55	60
His Leu Lys Tyr Trp Leu Tyr Tyr Leu His Pro Met Val Gln Arg Gln		
65	70	75
Gln Leu Asp Tyr Gly Ile Tyr Val Ile Asn Gln Ala Gly Glu Ser Met		
85	90	95
Phe Asn Arg Ala Lys Leu Leu Asn Val Gly Phe Lys Glu Ala Leu Lys		
100	105	110
Asp Tyr Asp Tyr Asn Cys Phe Val Phe Ser Asp Val Asp Leu Ile Pro		
115	120	125
Met Asn Asp His Asn Thr Tyr Arg Cys Phe Ser Gln Pro Arg His Ile		
130	135	140
Ser Val Ala Met Asp Lys Phe Gly Phe Ser Leu Pro Tyr Val Gln Tyr		
145	150	155
Phe Gly Gly Val Ser Ala Leu Ser Lys Gln Gln Phe Leu Ser Ile Asn		160
165	170	175
Gly Phe Pro Asn Asn Tyr Trp Gly Trp Gly Gly Glu Asp Asp Asp Ile		
180	185	190
Tyr Asn Arg Leu Ala Phe Arg Gly Met Ser Val Ser Arg Pro Asn Ala		
195	200	205
Val Ile Gly Lys Cys Arg Met Ile Arg His Ser Arg Asp Lys Lys Asn		

